



AGENDA ITEM #2

TO: Environmental Commission

FROM: Callie Niday, Staff Liaison

SUBJECT: Silicon Valley Clean Energy Authority (SVCEA) 2019 Building Electrification and

Electric Vehicle Infrastructure Reach Code Initiative

RECOMMENDATION:

Review and discuss Reach Code options and make a recommendation to City Council

BACKGROUND

Silicon Valley Clean Energy (SVCE), along with Peninsula Clean Energy (PCE), the San Mateo County Office of Sustainability (OOS), are supporting their municipalities to adopt building codes that will result in safer and more comfortable buildings, increase their electric vehicle charging infrastructure, and reduce their carbon footprint.

In support of municipalities and counties in SVCE and PCE service territory, SVCE and PCE are providing extensive technical assistance plus a \$10,000 incentive to each city that brings reach codes to their councils.

What Are Reach Codes?

Every three years, cities and counties across the state adopt the new Building Standards Code (Standards) or Title 24 of the California Code of Regulations. Cities and counties may adopt building codes more advanced than those required by the state, which are known as reach codes.

Reach codes aim to update local building codes concurrently with the state-required adoption of the 2019 Standards. The previous adoption cycle with new Standards took effect January 1, 2017. The next code adoption cycle, with new Standards, must be adopted by cities and the County by the end of calendar year 2019. Reach codes may include:

<u>Prescriptive Codes:</u> Require one or more specific energy efficiency measures.

<u>Performance Codes:</u> Require a building to perform more efficiently based on accepted computer modeling and allow trade-offs between energy efficiency measures.

Why Establish Reach Codes?

The benefits of greenhouse gas (GHG) free electricity can best be realized by electrification of new and existing buildings and transportation vehicles. Electrifying buildings and vehicles transition them away from the use of natural gas and gasoline to clean energy provided by SVCE. By developing electrification reach codes, cities can save energy and reduce GHG emissions in Santa Clara and San

Mateo County. All-electric buildings are safer and healthier to live in along with being cost effective, especially when adopted at the new construction stage.

It is most efficient for cities to coordinate adoption of reach codes with the adoption of the new 2019 building code, taking effect January 1, 2020.

Staff attends monthly Member Agency Working Group (MAWG) meetings with SVCEA and discusses updates with the reach code initiative.

For more information on Reach Codes with SVCE, please visit: https://www.svcleanenergy.org/reach-codes/

DISCUSSION

SVCEA MAWG Updates (January 2019 – June 2019):

The MAWG did not meet in December 2018. City staff attended the SVCE County-wide Reach Code Working Group Launch on January 15, 2019 to learn more about the Reach Code project described above. Members of the City Manager's Office and Community Development Department attended as well.

At the January 24, 2019 MAWG meeting, the group discussed the potential for SVCEA to form a joint funding mechanism with BAAQMD and other agencies to fund EV infrastructure. SVCEA staff is currently developing an RFP and scope of work to secure a consultant to explore the EVSE market and identify barriers, forecast infrastructure needs, and establish a mechanism to pursue grant funding. SVCEA also updated the group on youth focused programs like the Bike to the Future event, which took place in April 2019 and the creation of a student ambassador program, focused on educating students and schools about ways to reduce GHG emissions.

On March 20, 2019, SVCEA hosted a workshop on the Reach Code project to the appropriate City Staff, the Building/Developer Community and interested stakeholders. The Reach Code project is currently underway, the consultant completed the cost effectiveness study, and the initial draft of the reach codes was released in March.

At the April 25, 2019 MAWG meeting, the group discussed the release of the new PG&E rates for 2019. SVCE gave an announcement that their rates will have a 3% increase effective May 1st; however, they are still 6% below PG&E's rates. Sunnyvale gave a presentation on their Climate Action Playbook. The group received an update from Aimee Bailey, Director of Decarbonization and Grid Innovation, on SVCE Innovation Onramp which went live April 3rd. The Heat Pump Technology Days: Water Heating Meeting was held on May 9th in San Francisco. SVCEA also informed the group that the results of the cost effectiveness study for the Reach Codes project are available. SVCE is looking for input from cities and stakeholders; May 15th is the deadline to provide input before the reach code language is drafted. By the end of May 2019, SVCEA is planning on launching a showcase design grant focused on all-electric projects within the service territory, for which the new, all-electric Los Altos Community Center may be eligible. Also, the group announced that PG&E has delivered gas data for the Climate Action Plan.

July 8, 2019 Silicon Valley Clean Energy Authority At the May 23, 2019 MAWG meeting, SVCE presented the heat pump water heater program, which launched in June 2019. This program is offering funding for 100 residential projects including incentives for new heat pump water heaters and new solar panels. The group received an update on the showcase of all-electric design awards, which also launched in June 2019. The awards are going to be available for all-electric buildings that are already built, rather than future projects. The goal is to showcase the participating projects in SVCE's resource center. SVCE also gave an update on the jurisdictions that have sent in a letter of intent for the reach codes – including Cupertino, Milpitas, Morgan Hill, Mountain View, Campbell, Los Altos, and Sunnyvale. On May 29, 2019, the building model reach code language was shared and on June 6, 2019, the electric vehicle model reach code was discussed.

At the June 27, 2019 MAWG meeting, the group discussed the reach codes initiative with the building officials from various jurisdictions. The building officials from the City of Sunnyvale, City of Milpitas, and the City of Cupertino attended this meeting. As previously discussed, the overall goal of adopting a reach code is to increase the electrification of buildings and decrease buildings overall carbon emissions. Additional benefits of constructing a home that is all-electric is that they are the healthier, cleaner, safer, and more cost-effective option than building a home that has mixed-fuel (electricity and natural gas). Three pathways were presented at the meeting, including: pathway 1 (all-electric), pathway 2 (mixed fuel), and pathway 3 (mixed-fuel with no space and water heating). Pathway 3 would cut the carbon emissions by 80% and would still offer people the option to have their gas stove top. In addition, the group received an update that the all-electric showcase awards are now live; applications will be accepted until July 26, 2019. SVCE will showcase the customers who have successfully constructed an all-electric home and will showcase the design elements to help support the reach code effort. The FutureFit Heat Pump Water Heater program launched on June 28th and about 115 people have already shown their interest. The Heat Pump Cost Effectiveness webinar was given on July 3, 2019.

Attachments:

A. Reach Codes Special Member Agency Working Group Meeting Slides







Member Agency Working Group Special Reach Code Session

June 27, 2019



Today's Objectives

To have SVCE's Santa Clara County jurisdictions share interest and progress on reach codes to facilitate consistency, peer learning, and advancement of cleaner, healthier, safer buildings through the reach code effort.

Agenda

- I. Introductions
- II. Purpose
- III. Review codes
- IV. Where are we now
- V. How do we go from here to there
- VI. MAWG briefing (optional for non-MAWGers)

Summary Timeline

Jan Kickoff event for city staff

Feb Statewide cost-effectiveness study draft released

Mar Held four workshops

April/May Draft model reach codes released, city-specific stakeholder engagements

May 15 Last input into model code language

May 29 Building model reach code language shared

June 6 EV model reach code language shared

July 15 Final cost effectiveness studies published

Summer Develop city-specific formats for adoption*

Fall City councils vote*

Late Fall Submit Code Packet for CEC approval

January 1, 2020 State 2019 Building Codes go into effect

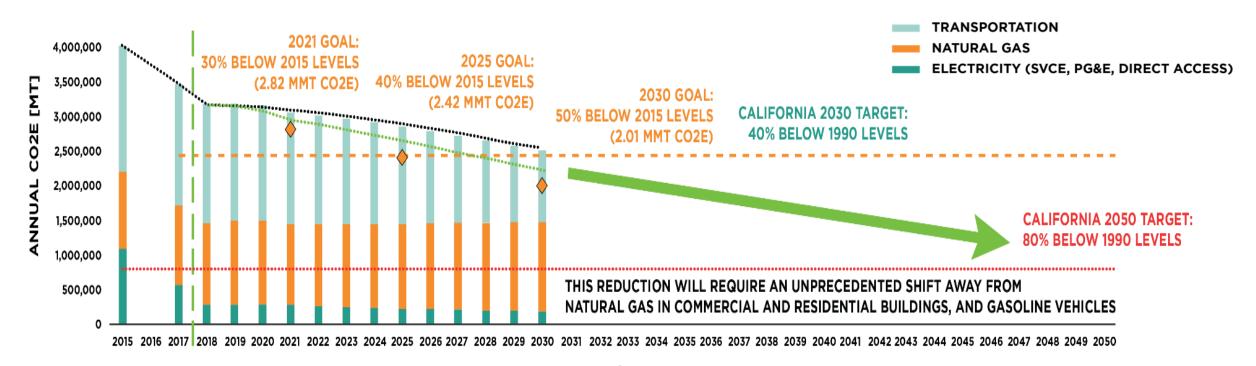
^{*}Timing is not fixed. Cities may adopt Reach Codes at any time.

Building Energy Code

Title 24 Energy Code Enhancements

Goal - Increase Electrification of Buildings

- Emissions reductions and decarbonization
 - CA Executive Order B-55-18 for Carbon Neutrality by 2045
 - Electricity grid getting cleaner every day



Will More Electric or All-Electric Help?

Cost Savings

- Lower first costs by not constructing natural gas infrastructure
- Operational costs (dependent on many factors)
- Lower risk pathway according to California Energy Commission
- Healthier air quality from eliminating indoor combustion according to California Air Resources Board
- Massive carbon reduction compared to current dual fuel (natural gas + electricity) buildings

Already included in 2019 Title 24 Code

	Residential	Nonresidential
Performance Compliance Margin	Energy Design Rating (EDR)	Percentage
Solar Photovoltaics (PV) Installation	Sized to offset annual kWh consumption of mixed-fuel	n/a
Electric-ready	120V/20A for future electric water heater installation	n/a

These model codes

- Represent maximum found cost-effective
- Balance regional consistency and ability for customization
 - Strong suggestions are not formatted
- Live in Energy Code, but can be integrated with other codes
- Should be reviewed and refined through your normal processes

Mandatory for New Construction, Additions, Alterations

Item	Code Reads	Reach Code Reads
Water Heating	120V/20A circuit	240V/30A circuit* Condensate drain
Clothes Drying	-	240V/40A circuit*
Cooking	-	240V/50A circuit*
Space Conditioning	-	-

Optional add-on to Reach Code
Location/design addressing air source and footprint
240V/30A circuit*

*or adequate capacity

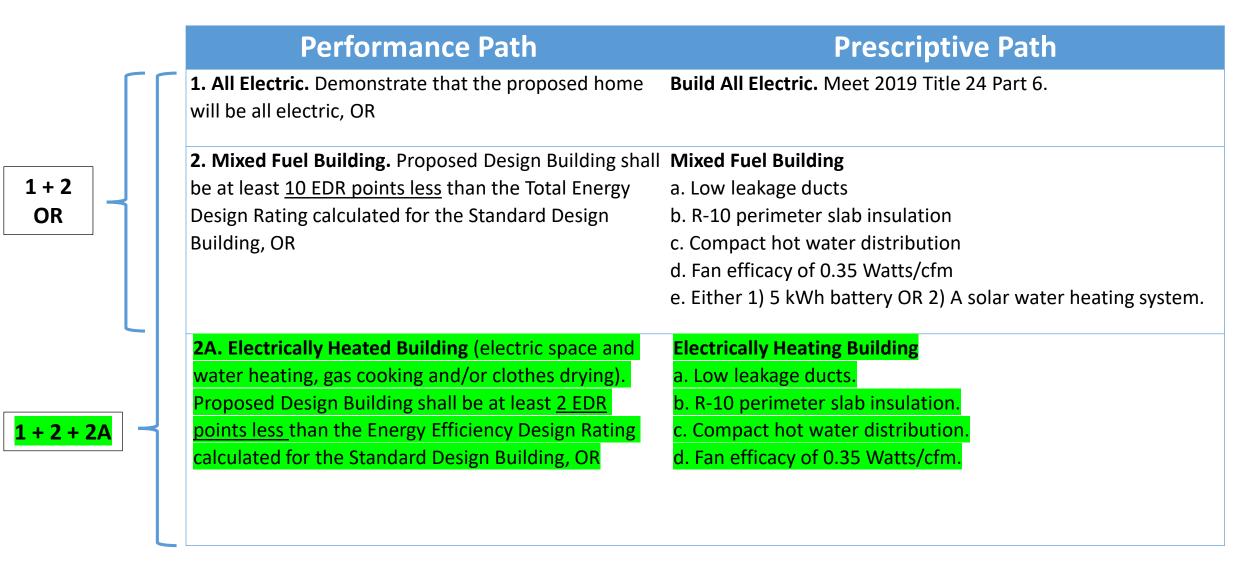
Reach Code Optional Requirements

Item	Reach Code Option
Solar (PV) installed	Require PV (non-residential only)
Performance	Encourage building simulation and compliance forms by certified energy analysts (must include
documentation	definition of what meets certified standard)

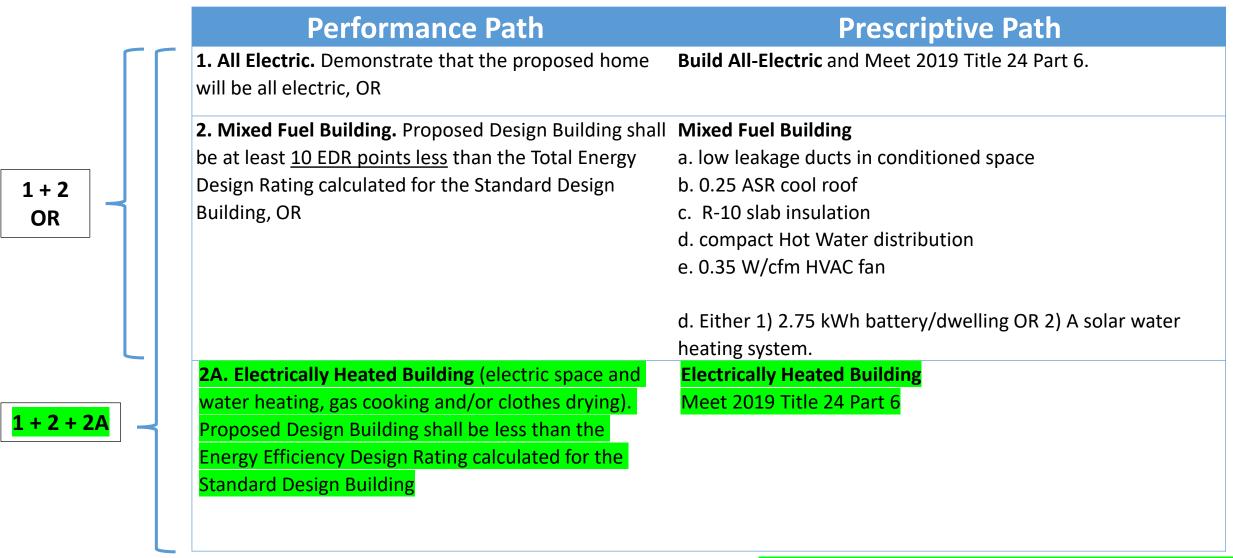
Options are formatted with green highlights

Code Supporting Electrification CALGreen Residential Mixed Fuel Energy EDR Margin = 14 Performance **Not Cost Effective Cost Effective** (Pathway 2) Code + Mixed Fuel Precedented High Eff. EDR Margin = 10 (Pathway 2A) Mixed Fuel Electric Htg and DHW EDR Margin = 2 EDR Margin = 2 Require Code + All-Electric Eff. (Pathway 1) (May Trigger All-Electric Pre-Emption) EDR Margin = 0 Code Baseline More Fewer **ALL** All-Electric All-Electric All-Electric Buildings Buildings Buildings

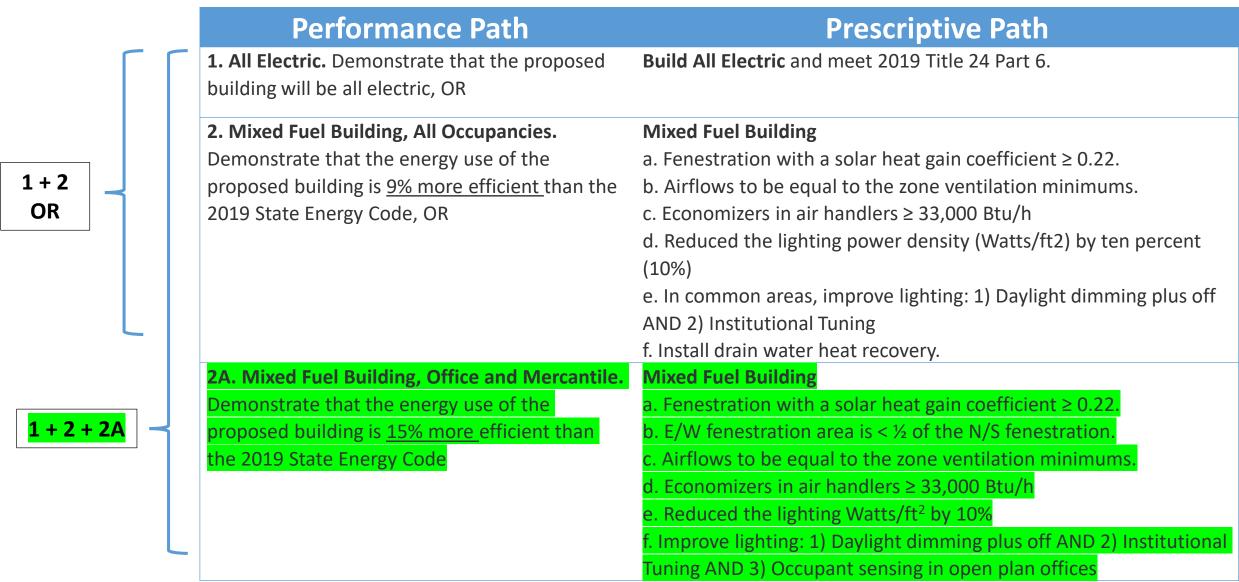
Single and Two-family New Construction



Multifamily New Construction (≤3 stories)



Nonresidential



Frequently Asked Questions

- Additions/Alterations/ADUs? Electric-ready req's only
- High Rise Multifamily? Carve-out added to code with results ~Aug/Sep
- Mixed Use? Average of compliance margins required in other spaces, weighted by floor area
- Core and Shell Nonresidential? Exception for core-and-shell which allows plumbing to be installed with no increased performance required. When gas meter is installed (i.e., the tenant would like gas) reach code is required. (currently under development)

Where Are We Now?

- For each building type, select 1 & 2, 1 & 2 & 2A, or Other (specify)
 - Single and Two-Family
 - Multifamily (≤3 stories)
 - Nonresidential
- Report out on <u>current</u> thinking. This is not a commitment.

Discussion

- What works?
- What is still unresolved?
- How closely aligned are we? How important is that?



Electric Vehicle Code

CALGreen Enhancements



EV Terms, Charge Rates

Level 1 "Trickle Charging"

Standard household outlet 15-20 Amp, 120v AC Driving distance provided: 3-4 miles/hour





Level 2 "Standard Charging"

Equivalent to a dryer outlet. 40+ Amp, 208/240v AC Driving distance provided (standard charging): 25-30 miles/hour



Level 3 "DC Fast Charging / SuperCharging"

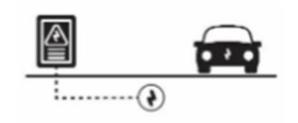
24-350kW

Driving distance provided 72-1,200 miles/hour



EV Terms, Readiness of Charging Station

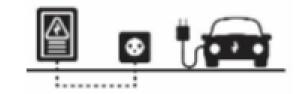
EV Capable - Some Assembly Required
Panel capacity, raceway (conduit) only at critical areas
(underground, pinch points, etc.) Definition is less
stringent than CALGreen 2019



EV Ready - Plug & Play

Panel **capacity**, raceway (**conduit**), overcurrent protection device (**breaker**), **wire**, **receptacle** & signage.

Can refer to Level 1 or Level 2





EV Charging Station (EVCS) - Level 2 Charge!

Charging station fully installed. All the equipment needed to deliver electrical energy from an electricity source to the EV at Level 2



Single and Two-family New Construction

	2016 CALGreen	2019 CALGreen	PCE/SVCE Proposed
	Mandatory	Mandatory	
Single Family Two-Family Townhome	(1) Level 2 EV Capable space per dwelling un "EV Capable" is more proposed by PCE/SV	extensive than that	2 EV spaces total: • 1 Level 2 EV Ready circuit • 1 Level 1 EV Ready circuit ELECTRIC VEHICLE OUTLET

Multifamily New Construction



	2016 CALGreen	2019 CALGreen	PCE/SVCE Proposed
	Mandatory	Mandatory	PCE/SVCE Proposed
	3%	10%	100%
Multi-Family		• • • • • • • • • • • • • • • • • • •	≤20 >20 dwelling units dwelling units
	3% Level 2 EV Capable for buildings with ≥17 units	10% Level 2 EV Capable	 ≤20 units: One Level 2 EV Ready per dwelling >20 units: Of all dwelling units, 25% Level 2 EV Ready (10% in affordable housing) 75% are Level 1 EV Ready (90% in affordable housing)

Non-Residential, Office & Commercial



spaces

	2016 CALGreen	2019 CALGreen	DOE (CVC)	Duamanad
	Mandatory	Mandatory	PCE/SVCE	Proposed
Non-Residential		6%	10%	5%
	~6% Level 2 EV (for buildings wing spaces)	·	Office building: • 10% Level 2 EVSE • 10% Level 1 EV Ready • 30% EV Capable or EV Ready	 Commercial: Of all parking spaces, 6% Level 2 EVSE 5% Level 1 EV Ready Over 100 spaces: option for 80kW DC Fast Charger per 100

Where Are We Now?

- For each building type, identify OK as is, or
 Increase Quantity, Readiness, or Charge Rate
 - Single and Two-Family
 - Multifamily (≤3 stories)
 - Nonresidential
- Report out on <u>current</u> thinking. This is not a commitment.

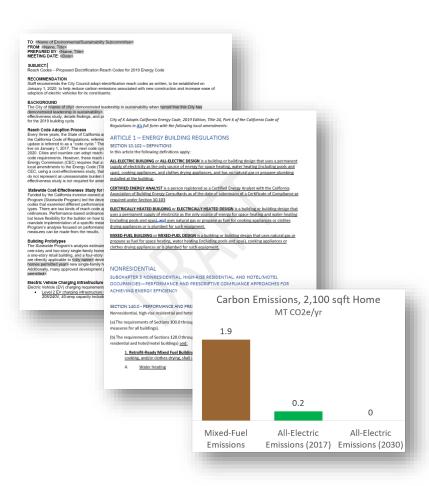
Discussion

- What works?
- What is still unresolved?
- How closely aligned are we? How important is that?

Tools and Resources



Adoption Tools & Resources



Presentation to Council

- Staff Report Template
- Reach Code Ordinance Language
- Presentation Template

Information for Council

- Carbon Emissions Savings
- Housing Impacts
- FAQs
- Cost Effectiveness Presentation

Implementation Tools & Resources

Compliance with Building Electrification Reach Code – Single Family
Instructions: Fill out form and attach form directly on drawing set for permit review. This form is only required for New Construction projects.
Is the building applying for a permit all-electric, or is it mixed-fuel (using gas or propane for some end uses)?
All-Electric
If All-Electric:
Does the building's energy model meet California Energy Code (CEC) Compliance?
If Mixed-Fuel
Does the building meet each of the following requirements? Call-out specifically on electrical and mechanical plans Is a dedicated 240V, 30A electrical receptacle located within 3 feet of each water heater? Is a dedicated 240V, 30A electrical receptacle located within 3 feet of each clothes dryer? Is a dedicated 240V, 50A electrical receptacle located within 3 feet of each cooktop? Is a dedicated 240V, 50A electrical receptacle located within 3 feet of each cooktop? Is the air conditioning system capable of operating in heat pump mode? Does the building's energy model perform 15% better than CEC requires?
If prescriptive performance path is selected, does the building meet each of the
following requirements in addition to requirements? Call-out specifically on plans Verified low leakage ducts in conditioned space R-10 perimeter slab insulation Meets requirements for "basic compact hot water distribution Fan efficacy of 0.35 Watts/CFM verified by HERS rater If building uses gas or propane for space heating or water heating: Includes 5 kWh battery storage system
 Includes solar water heating with 0.20 solar fraction or greater

Permitting, enforcement, and inspection resources

- Permit Checklist
- Inspection Checklist
- Training for Building Department Staff
- FAQs

Implementation Tools & Resources

2019 Energy Reach Code Amendments Promoting Healthy, Safe Homes & Buildings



What Are Reach Codes?

Reach codes provide an opportunity for local governments to amend the 2019 state building code for new homes and commercial buildings. The amendments or "reach codes" are designed to encourage low-cost all-electric new construction of healthier, safer, and zero emission buildings while making it easier to charge electric vehicles.

Why Reach Codes?

- · Incentivize lowest-cost construction options
- . Encourage development of healthier, safer, lower emission buildings
- · Reflect the sustainability-related values of our community

· Improve indoor air quality and reduce the risk of fires

New all-electric homes and apartments can save thousands!

Single Family Home Reach Code Options

Builders and developers can choose between an all-electric or mixed fuel construction option. The code encourages the all-electric option as it is less expensive, provides a healthier, safer residence while significantly reducing nollution

Construction Options	All-Electric Construction	Mixed Fuel Construction (Electric & Natural Gas)
Efficiency required above state code (compliance margin)	0%	Additional 17 to 29%
Estimated increase in construction cost	\$0	Extra \$6,800 to \$7,000
Emissions from gas	Zero	4+ metric tons of CO2 per year
Indoor air quality	Best	Worse
Equipment utilized	All electric appliances	Gas connection, gas meter, gas furnace and water heater, CO monitor, electrical wiring to all gas appliances for future switch to electric with additional options for additional PV/solar and storage required





To learn more, visit PeninsulaReachCodes.org

Public and Building Owner Resources

- Case Studies
- Website
- Homeowner Flyer
- FAQs on website
- Trainings for Environmental Advocates
- Community Advocates List
- Cost Effectiveness Presentation Tool
- Carbon Emissions Savings
- Housing Impacts

How do we go from here to there?

Conceptual Next Steps

- Staff agreement on proposal
 - What is needed for this?
- Stakeholder Engagement(s)
 - What is needed for this?
 - Refine as warranted
- Including this topic on Council calendar
 - What Month are you planning to vote on Building Codes?
 - What is needed? Staff Report? Other?

Wrap-up

- Summarize findings of "Where are we Now"
- Schedule support for your upcoming internal, stakeholder, or council meetings
- Develop additional tools/resources

"Together, we can make an incredible difference – Economics and the Environment both win in this Reach Code."

-- Unnamed SVCE staff member

Questions?

Reach Code Websites: PeninsulaReachCodes.org SiliconValleyReachCodes.org



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Member Agency Working Group

June 2019

Agenda

- SVCE Updates
- Program Status
 - o EVSE
 - All Electric Design Awards
 - Heat Pump Water Heater



EVSE Strategy - Summary

Multi-Unit Garden Apartment Technical Assistance and Incentives

- Provides EV charging technical assistance and incentives
- Focus on garden apartments
- Site visits and electrification plans

Regional Recognition Program

- Recurring recognition for best practices and information sharing
- Participants takeElectrification pledge
- Tie to SVTEC funding

Workplace EV Charging Rebates

- Rebates for workplace charging deployment
- Technical assistance through Regional Recognition Program

Fleet Electrification Planning Grants

- Competitive Grants for fleet electrification planning and site upgrades
- Focus on visible fleets, school buses, and public agencies

Solicitation for DC Fast Charging Near Priority Charging Zones

- RFP for DCFC deployment near target population zones (defined by SVCE)
- Incentives for each port deployed

Single Family Customer Resource Center

- Web based home charging resources
- Installer connect feature
- Pre-qualified charger list

All-Electric Showcase Awards

- Program is now live accepting applications through July 26th
- Up to \$6,000 per project
- Please promote through your channels!
- Goal is to create material for our website highlighting design elements, community member narratives and lots of pictures
- Show our customers successful allelectric construction projects in this area



Cash Prizes Available to Homeowners,
Developers, Builders and Architects for NonPolluting Electric Homes and Buildings

Local agency offers awards to exemplary all-electric residences and developments

Sunnyvale, Calif. – Silicon Valley Clean Energy (SVCE) launched a new program that offers cash awards to owners, developers, builders, architects and designers of all-electric homes and buildings. The goal of the All-Electric Showcase Awards Program is to feature building examples that showcase the benefits of all-electric construction in Silicon Valley. Utilizing innovative and



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- Up to \$6,000 per project
- Please promote through your channels!
- Goal is to create material for our website highlighting design elements, community member narratives and lots of pictures
- We want to show our customers that all-electric construction projects have already been successful in this area



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FutureFit – Heat Pump Water Heaters

Program Rebates		
Incentive Amounts	Up to \$4,500 Up to \$2,000	Heat Pump Water Heater + 200A service panel upgrade Heat Pump Water Heater installation only
Incentive Amounts (CARE/FERA Customers)	Up to \$6,000 Up to \$3,500	Heat Pump Water Heater + 200A service panel upgrade Heat Pump Water Heater installation only



- Program Launches June 28th!
 - Funding for about 100 systems
 - partially funded by an Air District Climate Protection Grant
- **Soft Launch. Limited promotion for now.** We have 32 115+ folks already "Interested" and only a few contractors capable of handling their inquiries.

